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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,447	10/19/2001	Yoshikatsu Akiyama	PK9931	3040

22840 7590 06/24/2004

AMERSHAM BIOSCIENCES  
PATENT DEPARTMENT  
800 CENTENNIAL AVENUE  
PISCATAWAY, NJ 08855

EXAMINER
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HANLEY, SUSAN MARIE

ART UNIT	PAPER NUMBER
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1651

DATE MAILED: 06/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/890,447

**Applicant(s)**

AKIYAMA ET AL.

**Examiner**

Susan Hanley

**Art Unit**

1651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) See Continuation Sheet are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Continuation of Disposition of Claims: Claims pending in the application are 2-5,7,12,13,19-22,24,29,36-39,45-50,61,62,64,68,75,76,81,83 and 88.

Continuation of Disposition of Claims: Claims subject to restriction and/or election requirement are 2-5,7,12,13,19-22,24,29,36-39,45-50,61,62,64,68,75,76,81,83 and 88.

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## DETAILED ACTION

### *Election/Restrictions*

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 2-5, 7, 12 and 13, drawn to polymers having a backbone which is attached to an ester group which is turn linked through an R group to an ester or amido group, or a polymer having a backbone which is attached to an amido group which is turn linked through an R group to an ester, a method of making said polymer and a method of separating or adsorbing biological samples comprising said polymer. If this group is elected, then the below specie election is required.

Group II, claim(s) 19-22, 24 and 29, drawn to polymers having diamido groups attached to the backbone and a method of making said polymer. If this group is elected, then the below specie election is required.

Group III, claim(s) 36 and 37, drawn to polymers having a cyclic crosslinking group. If this group is elected, then the below specie election is required.

Group IV, claim(s) 38 and 39, drawn to polymers having a pendant amide group wherein the nitrogen of the amide group is bonded to one hydrogen atom. If this group is elected, then the below specie election is required.

Group V, claim(s) 45, drawn to an adsorption and separation material comprising a temperature-responsive polymer.

Group VI, claim(s) 46-50 and 61, drawn to a polymer having a pendant amide group directly boned to the backbone via the carbonyl group of the amide functionality and a method of making, thereof.

Group VII, claim(s) 62 and 64, drawn to a polymer having a pendant amide group wherein the carbonyl group is directly bonded to the backbone and the nitrogen is a member of a piperidine ring.

Group VIII, claim(s) 68, drawn to a polymers having two pendant groups comprising an amide group wherein the carbonyl group is directly bonded to the backbone and the nitrogen is a member of a piperidine ring and a second pendant group comprising an amide or an ester.

Group IX, claim(s) 75 and 76, drawn to a polymer having a pendant amide group wherein the carbonyl group is directly bonded to the backbone and the nitrogen is a member of a ring having at least one other nitrogen atom. If this group is elected, then the below specie election is required.

Group X, claim(s) 81 and 83, drawn to drawn to a polymer having at least two pendant groups comprising an amide group wherein the carbonyl group is directly bonded to the backbone and the nitrogen is a member of a ring having

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at least one other nitrogen atom and a second pendant group comprising an amide or an ester. If this group is elected, then the below specie election is required.

Group XI, claim(s) 88, drawn to a polymer having two pendant groups wherein one group is a benzene ring and the second pendant group is an acid amide or an ester. If this group is elected, then the below specie election is required.

The inventions listed as Groups I-XI do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: There is a lack of unity of the invention a posteriori. The special technical feature is that the polymers are "temperature sensitive" due to the functional groups attached to the polymer backbone. EP 301301 discloses temperature sensitive polymers for separating and recovering substances by electrophoresis. Such polymers include poly(N-acryloyl piperidine), poly(N-alkyl or N-cycloalkyl acrylamide) and so on (col. 4, lines 18-40). The requisite unity of invention therefore no longer exists inasmuch as a technical relationship involving one or more of the same or corresponding special technical features in does not exist among the groups of polymers.

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

**If Group I is elected**, Applicant is required to select a polymer wherein the backbone is bonded to one of four types of linear pendant depicted in claim 2. For the purpose of clarity, Applicant is requested to include the structure of the elected linear backbone. The polymer backbones comprising hydrogen (first row of polymers) or a methyl group (second row of polymers) will be examined with the choice of linear backbone. **Also, if Group I is elected**, Applicant is required to select the divalent R group comprising a hydrocarbon group or an aromatic ring.

**If Group II is elected**, Applicant is required to select a polymer wherein R is a hydrocarbon group or an aromatic group. The polymer backbones comprising a hydrogen or a methyl group will be examined with the choice of R group.

**If Group III is elected**, Applicant is required to select an acid amide, an ester or an ether group for **each** of  $X^1$ ,  $X^2$ ,  $X^3$  and  $X^4$ . For each of  $X^1$ ,  $X^2$ ,  $X^3$  and  $X^4$ , Applicant is required to define the orientation of the linkage of the acid amide, the ester or the ether group. Specifically, if the X functionality is an amide, is the carbonyl group or the nitrogen attached to the carbon backbone? If the X functionality is an ester, is the carbonyl group or the ether oxygen atom attached to the carbon backbone? If the X functionality is an ether, is the ether oxygen or the alkyl group attached to the carbon backbone?

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**If Group IV is elected**, Applicant is required to elect an acid amide, an ester or an ether group for X<sup>5</sup>. Applicant is further required to define the orientation of the linkage of the acid amide, the ester or the ether group. Specifically, if the X functionality is an amide, is the carbonyl group or the nitrogen attached to the carbon backbone? If the X functionality is an ester, is the carbonyl group or the ether oxygen atom attached to the carbon backbone? If the X functionality is an ether, is the ether oxygen or the alkyl group attached to the carbon backbone?

**If Group IX is elected**, Applicant is required to elect a nitrogen atom or a carbon atom for each of A<sup>1</sup>, A<sup>2</sup>, A<sup>3</sup>, A<sup>4</sup> and A<sup>5</sup>.

**If Group XI is elected**, Applicant is required to elect a nitrogen atom or a carbon atom for each of A<sup>1</sup>, A<sup>2</sup>, A<sup>3</sup>, A<sup>4</sup> and A<sup>5</sup>.

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

The following claim(s) are generic: 2, 19, 36, 38, 75 and 88.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: For each group, the choice of specie for a given structural feature leads to compounds having a different, unrelated structures which, in turn, may have widely differing chemical and physical properties.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer

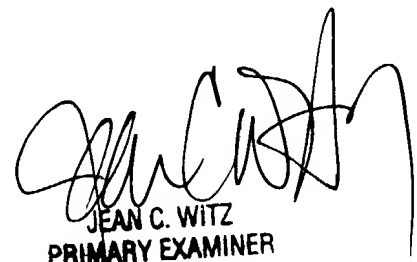
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an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan Hanley whose telephone number is 571-272-2508. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JEAN C. WITZ  
PRIMARY EXAMINER